CLAIMS:

1. A charge pump comprising:

a single voltage multiplier stage (1) for converting an input voltage (VDD) into an output voltage (Vo) under control of a clock signal (Q, Qn; CLKO), and

an oscillator (2) for receiving the input voltage (VDD) to generate the clock signal (Q, Qn; CLKO) having a repetition period (Tr1, Tr2) being substantially proportional to a squared input voltage (VDD^2).

2. A charge pump as claimed in claim 1, wherein the oscillator (2) comprises:

a control circuit (CC) for receiving the input voltage (VDD) to supply a control signal (CS) being substantially proportional to the squared input voltage (VDD^2), and wherein the repetition period of the oscillator (2) is substantially linearly dependent on the control signal (CS).

3. A charge pump as claimed in claim 1, wherein the oscillator (2) comprises:

a capacitor (MP13, MP14),

a current source (MN7) for supplying a current (Io) to charge or discharge the capacitor (MP13, MP14),

a control circuit (MP1) for receiving the input voltage (VDD) to supply a further current (Id) being substantially proportional to the squared input voltage (VDD^2), wherein the first mentioned current (Io) and the further current (Id) have a fixed ratio.

4. A charge pump as claimed in claim 1, wherein the charge pump further comprises a duty cycle modulator (3) for modulating a duty cycle of the clock signal (CLKO), the duty cycle modulator (3) comprises an input for receiving the output voltage (Vo) to adapt the duty cycle to obtain a substantially constant output voltage (Vo).

5. A charge pump as claimed in claim 4, wherein the duty cycle modulator (3) comprises:

a first comparator (COM1) for comparing the output voltage (Vo) with a reference voltage (Vr) to supply a comparison signal (COS),

a first integrator (C2) for generating a first saw-tooth signal (CPO) having a rising or falling slope dependent on whether the comparison signal (COS) indicates that the output voltage (Vo) is above or below the reference voltage (Vr), or the other way around,

a second integrator (C3) for generating a second saw-tooth signal (RA) having a slope dependent on the squared input voltage (VDD^2), and

a second comparator (COM2) for comparing the first saw-tooth signal (CPO) and the second saw-tooth signal (RA), the duty cycle being dependent on an instant the first saw-tooth signal (CPO) reaches the second saw-tooth signal (RA).

6. An integrated circuit for use in a charge pump comprising a single voltage multiplier stage (1) for converting an input voltage (VDD) into an output voltage (Vo) under control of a clock signal (Q, Qn; CLKO), the integrated circuit comprising:

an oscillator (2) for receiving the input voltage (VDD) to generate the clock signal (Q, Qn; CLKO) having a repetition period (Tr1, Tr2) being substantially proportional to a squared input voltage (VDD^2).

7. A mobile device having a charge pump comprising:

a single voltage multiplier stage (1) for converting an input voltage (VDD) supplied by a battery into an output voltage (Vo) under control of a clock signal (Q, Qn; CLKO), and

an oscillator (2) for receiving the input voltage (VDD) to generate the clock signal (Q, Qn; CLKO) having a repetition period (Tr1, Tr2) being substantially proportional to a squared input voltage (VDD^2).

8. A USB master device having a charge pump comprising:

a single voltage multiplier stage (1) for converting an input voltage (VDD) into an output voltage (Vo) for a USB slave device under control of a clock signal (Q, Qn; CLKO), and

an oscillator (2) for receiving the input voltage (VDD) to generate the clock signal (Q, Qn; CLKO) having a repetition period (Tr1, Tr2) being substantially proportional to a squared input voltage (VDD^2).